

FISHERIES RESOURCES OF *Saskatchewan*



CONSERVATION BULLETIN No. 5

FOREWORD

This bulletin is the fifth of a series, the purpose of which is to describe the natural resources of Saskatchewan and outline sound methods for their management and utilization. The publications are intended to provide those people who are interested in natural resources with specific information of a semi-technical nature. The main consideration in preparing the material is to provide those who are, or may become, community leaders in conservation with a sound basis for formulating opinions on this important subject.

Some of the bulletins will deal mainly with individual species; some with broader aspects of management and harvesting. In all cases they will attempt to convey some knowledge of the lives of plants and animals and their place in the vastly complicated web of nature, for such knowledge is essential to an understanding of conservation. Equally important is a conception of the place of man in the natural scheme of things. Adequate care of natural resources has become the most vitally important aspect of human existence on this increasingly crowded earth, and man may reap well-being only by sowing understanding.

Other bulletins in this series published to date are:

No. 1 — Beaver in Saskatchewan.

No. 2 — White-tailed Deer in Saskatchewan.

No. 3 — Fisheries Research in Saskatchewan.

No. 4 — Sharp-tailed Grouse in Saskatchewan.

A complete list of publications is available from your local Conservation Officer or from the department offices at Regina.

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INTRODUCTION

To those who think of Saskatchewan solely in terms of "bald prairie" or wheatland, the knowledge that water accounts for about one-eighth of its surface area may come as something of a surprise. The water bodies that make up these 31,000 square miles range from tiny pothole lakes in the Great Sand Hills of the southwest to the tremendous lakes of the Precambrian Shield, and from tiny trout streams of the Missouri watershed to the mighty, clear, cold rivers of the north such as the Churchill, Geikie and Fond du Lac.

The greater part of this water area lies in the little-known, sparsely-populated northern half of Saskatchewan, so no one has calculated with accuracy the total number of lakes and rivers in the province. However, a conservative estimate would place at ten thousand the number of lakes in Saskatchewan capable of supporting a fish population. These lakes, along with the rivers that form their drainage systems, provide the basis for one of Canada's major inland fisheries.

The fisheries played a vital role in the province's early history by providing a readily-available supply of fresh food for the explorers, fur-traders and later the settlers. However, as the economy of the province developed, its fisheries began to play a less vital role in the lives of the people. It is only in recent years—chiefly since World War II—that Saskatchewan's fisheries resources have begun to move back into the limelight.

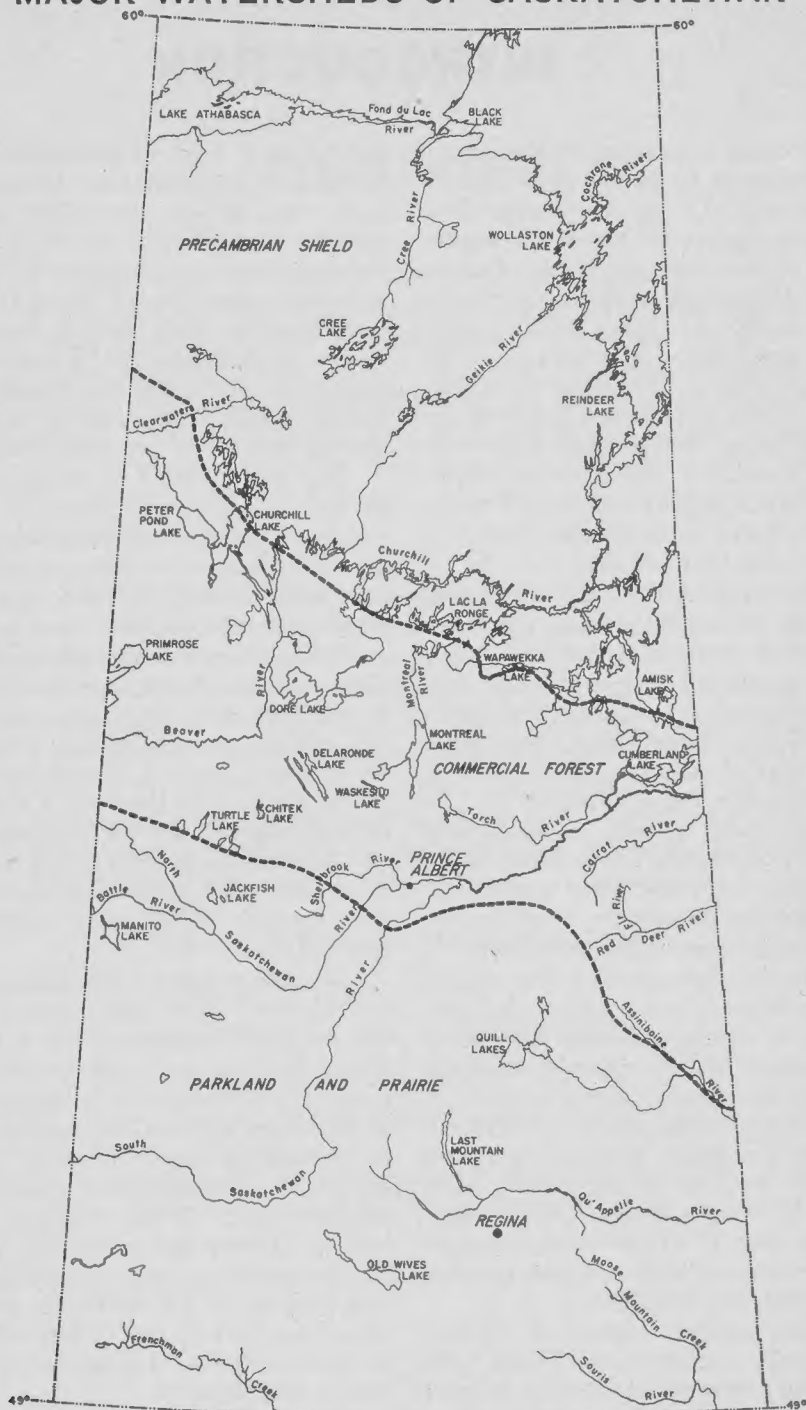
The post-war years of relative prosperity and increased leisure have sparked a tremendous interest in sport

fishing as a form of recreation and today it is estimated that one out of every nine in our population is an angler. A great deal of the tourist industry that has developed in Saskatchewan since World War II has been based on sport fishing. In addition to an estimated 100,000 resident anglers, around 8,000 Americans visit Saskatchewan every year to fish for the big ones in our northern lakes.

The development of access roads in the north, construction of fish processing plants and enforcement of quality standards have stimulated the commercial fishing industry, and approximately ten million pounds of fish a year are shipped from Saskatchewan lakes to domestic and foreign markets. In addition, more than two and one half million pounds of fish are harvested under domestic licence and Free Indian Permits for local use. Fur farm fishing accounts for another six and one half million pounds and in recent years the ranch mink crop has averaged around 50,000 pelts valued at \$600,000.

This bulletin has been designed to provide the public with a broad picture of the resources on which these sport, domestic and commercial fisheries are based. After a brief discussion of the major species, the fisheries will be considered on the basis of three areas: the Precambrian Shield or northern part of the province, the heavily forested belt across the centre of the province, and the parklands and prairies of the southern, settled area. The final portion of this bulletin is devoted to an examination of the trends in utilization.

MAJOR WATERSHEDS OF SASKATCHEWAN



THE MAJOR SPECIES

Throughout the vast networks of lakes and rivers in Saskatchewan, more than 50 fish species are found. Some species, such as pike, range throughout the length and breadth of the province from Manitoba to Alberta and from pothole lakes near the United States boundary to the cold rock-bound lakes that border the North West Territories. The majority of these species are native to the province but others have been introduced and the latter are usually found in very limited areas. Most of the species have no direct value in terms of commercial, domestic, fur farm or sport fishing although they may play a vital role as "intermediary" in a food chain, of which the end result is a fish for market or for the angler's creel.

A detailed description of all fish species in Saskatchewan will be presented in a later bulletin in this series. The following list therefore includes only species of some commercial or sport value, and is limited primarily to a description of their distribution and use.

PIKE (*Esox lucius*)

The pike, often called "northern pike" or "jackfish" is one of Saskatchewan's most widely distributed fish species, occurring in almost every stream and lake in the province which is capable of supporting fish life. It bears the brunt of angling pressure and is also fished commercially in northern lakes where angling pressure is not sufficient to harvest the annual crop. Its flesh is quite palatable, particularly when caught in cold waters.

PICKEREL (*Stizostedion vitreum*)

The pickerel is commonly called yellow walleye or simply walleye. This species is not as plentiful in Saskatchewan as the pike since it prefers clear water with gravel or rock areas, but like the pike is found from one extremity of the province to the other. Pickerel is one of the finest Saskatchewan food fish, a favorite among sport fishermen, and is fished commercially in large quantities in northern lakes where angling pressure is light.

LAKE TROUT (*Cristivomer namaycush*)

The lake trout is a cold-water fish, abundant in the deep lakes of the Precambrian Shield. Except for a few lakes in the central forest area, its distribution in Saskatchewan is limited to the Shield. The flesh is firm, rather oily, with a rich pink color comparable to Pacific Coast salmon, and a distinctive, rather strong flavor. The lake trout is a preferred target for anglers in the north, particularly during spring and summer when they can be taken near the surface with light tackle. Except in the extremely cold lakes of the far north they are caught in summer only by deep-water trolling with heavy tackle. The lake trout is second only to whitefish in the commercial fishing industry, with the annual harvest averaging around one and one half million pounds in recent years.

ARCTIC GRAYLING (*Thymallus signifer*)

The Arctic grayling is one of the most beautiful fresh water fish on the



An Arctic grayling with its colorful dorsal fin on display.

continent. It is easily distinguished by its magnificent dorsal fin which is a deep blue color with white spots and a gold and purple band along the outer edge. It is found only in the purest, clearest water in Saskatchewan's far north and is probably the least abundant and least accessible of all Saskatchewan's native game fish. It is the lure which draws many anglers, particularly non-residents, into the fly-in-camps of the far north. Commercial fishing of grayling is not allowed.

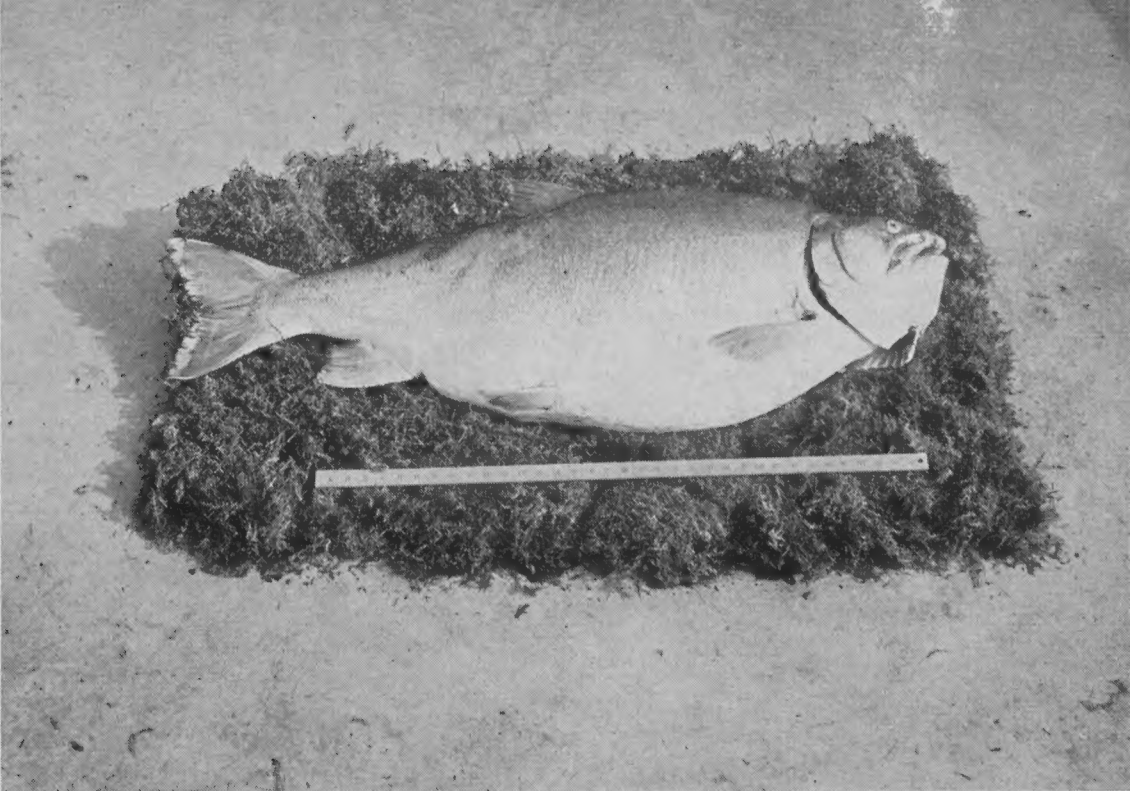
COMMON WHITEFISH (*Coregonis clupeaformis*)

The whitefish is important in Saskatchewan almost solely as a commercial species, although in recent years they have been caught by anglers at certain times of the year

when they feed on the surface. The main whitefish production comes from lakes of the central and northern areas although they also occur in a few lakes in the southern part of the province. Whitefish, particularly from the cold northern lakes of Saskatchewan, is a noted table fish and most of the annual five million pound production is exported.

CISCO (*Leucichthys species*)

The cisco is very similar in appearance to the whitefish, but of inferior eating quality, and can be distinguished from the whitefish by the protruding lower jaw. It occurs in many lakes throughout the province including Last Mountain Lake and the Qu'Appelle lakes in the south. It is widely used for both human and animal food although not exported in



World record lake trout, weighing 80 pounds, 8 ounces, caught by commercial fishermen in Lake Athabaska.

quantity. It is the main fish species used by mink ranchers.

Species of secondary importance include Eastern brook trout, brown trout and rainbow trout, all of which have been introduced to the province and are limited to a few streams and lakes in the southern and central parts of the province; perch which are particularly plentiful in the Qu'Appelle Lakes and some other water bodies in southern Saskatchewan and attract

a fair amount of angling pressure; the various members of the sucker family which are caught mainly during the spring spawning run for "domestic" use; lake sturgeon which are harvested in limited numbers by commercial fishermen in the Cumberland House area of central Saskatchewan; and goldeye which are caught by anglers in the north and south Saskatchewan Rivers and also occur in Lake Athabaska but not in quantities sufficient for commercial fishing.

LAKES OF THE SHIELD



LAKES OF THE SHIELD

Extending in a sweeping parabola from the north-west corner of Saskatchewan down through the northern end of Churchill Lake and Lac Ile a la Crosse, south-eastward through Lac la Ronge and east to the Manitoba border at Amisk (Beaver) Lake is the southern edge of the Precambrian Shield. In the western part of the Shield is a great sand area—rolling, lightly forested, infertile. South of the Shield is the undulating glacial till plain, covered at first by forest and then opening into the great agricultural area of the south.

The Shield is a land of rock, muskeg, lake and sparse coniferous forest. The entire area is lightly populated and virtually without roads except for winter trucking trails and a few short mining roads. The traditional means of travel in this country are dog team and canoe, though in recent years these have been supplemented by tractor train, truck (in winter) and plane.

The lakes of the Precambrian area are for the most part deep, clear, cold and infinitely numerous. In certain areas which are shown as dry land on most maps, a hundred or more lakes, ponds and muskeg sloughs may be visible from a plane flying at 2,000 feet. Most of the smaller water bodies are too shallow, acid, or stagnant to support fish, but in addition to the fifty or so lakes comparable in size to Last Mountain Lake, there are many hundreds of others that are fish producers.

The major species of fish in the lakes of the Precambrian Shield are lake trout, northern pike (jackfish), walleye (pickerel, yellow pike-perch), Arctic grayling, cisco, goldeye, whitefish, several species of sucker, and

burbot. The burbot is not sought as either game or food fish. Goldeye do not occur in sufficient quantities to permit much commercial fishing of the species. Cisco, although palatable enough as a food fish, have too low a market value to justify the cost of shipping out of the north. Mink ranchers utilize cisco and a fair proportion of suckers, whitefish, burbot, pike, and other species as animal feed. Although there are as yet only a few mink ranches on the lakes of the Shield, this often converts otherwise unuseable fish into a product which provides an income, pound for pound, equal to or above the income derived from commercial fishing for the better food species. Arctic grayling and lake trout are the two species that mainly lure anglers to the Precambrian lakes although there is also excellent angling for pike and pickerel.

Whitefish, pickerel, pike and lake trout are the main species caught commercially in the north. Despite the remoteness of the area, the fish of Saskatchewan's north, like those from northern Manitoba, Alberta and the North West Territories, are outstanding for their flavor and firmness. The selling price on markets as distant as New York and St. Louis is high enough to defray the high cost of shipping.

There are five major lakes lying in the Precambrian region of northern Saskatchewan: Reindeer, Wollaston, Cree, La Ronge and Athabaska—the latter two extending slightly into the sedimentary area. Together they total about 7,300 square miles in area, of which perhaps 1,400 square miles are outside Saskatchewan's boundaries, because Lake Athabaska extends into Alberta, and Reindeer into Manitoba.

Lake Athabaska, extending almost 150 miles eastward from the Alberta border, has an area of 2,165 sq. miles in Saskatchewan. This lake, even though its north shore is only 30 to 50 miles from the northern boundary of the province, is Saskatchewan's greatest producer of commercial fish, having produced almost a million and a quarter pounds of fish for market in 1955. Almost three-quarters of the catch was trout, about one-quarter whitefish, and pickerel accounted for about 30,000 pounds. If market conditions permitted, it is estimated that the lake could produce close to two million pounds of whitefish alone on a sustained yield basis. Currently most of the catch is shipped by barge to the railhead at Waterways, Alberta.

Bordered on the north by rugged Precambrian rock and on the south by rock and large extents of duned sand, the main body of the lake is deep, cold and, in a high wind, treacherous. Consequently, its potential as a sport fishing location is not great, although in the summer of 1955 the world record lake trout was netted in this lake, weighing eighty pounds and eight ounces. Eastward beyond Fond du Lac where the lake narrows down to a width of five miles or less, extending 50 miles to Stony Rapids, the sport fishing potential is great and is being developed by several outfitters. As with all northern lakes which have a short growing season and low mineral content, the fish-producing capacity of Lake Athabaska is not great in terms of pounds per acre, but the fish tend to grow to a large size—as further evidenced by the 42-pound northern pike taken by an angler near Uranium City in 1953.

Stony Rapids, where the Fond du Lac River empties into Lake Atha-

baska, is becoming noted all over the continent as an Arctic grayling locality. Grayling are also plentiful in the many rivers, such as the Grease, which empty southward into Lake Athabaska. They are also found in shore waters all along the north shore of the lake, where a studding of islands provides shelter. These fish are one of the top drawing cards of the north, attracting hundreds of anglers to the area each summer. As the north develops tourist-wise, there is little doubt that this deep, rugged, typically Precambrian lake will get its share of sport fishermen.

Geographically, Wollaston is said to be unique among all the major lakes of the world in that it drains in two directions, part of its outflow going northeast into Hudson Bay via the Cochrane and Churchill Rivers and part flowing north-west into the Mackenzie River system via Lake Athabaska. Commercial fishing on Wollaston has varied between 115,000 pounds and more than 800,000 pounds since 1946, when it was opened as a major fishing lake. In 1956 a filleting and freezing plant was established on the lake and lake limits were set at 800,000 pounds, which consists mainly of whitefish and trout, with a small amount of pickerel. Grayling and pike are also found in Wollaston.

Reindeer is the second largest Saskatchewan lake, with an area of 2,058 square miles. Like Athabaska, Reindeer Lake has considerable expanses of open water which may render sport fishing from smaller boats somewhat hazardous in places, but on the other hand there are many well protected island-studded areas with great sport fishing potential. Reindeer has an advantage over some of the more northerly lakes in that it is now joined by road to the railhead



Typical of the Shield country is this view of Iskwatikan Lake (foreground) and part of Lac la Ronge in the distance.

The new fish filleting plant at Lac la Ronge, equipped with processing and cold storage facilities.





Angling for Arctic grayling at Hunt (Lefty's) Falls is a special treat for fly-in fishermen.

at Lynn Lake, making it accessible at somewhat less expense than such points as Wollaston and Stony Rapids which require air transportation. Like Wollaston, Reindeer has a freezing and filleting plant, and in recent years commercial production has varied up to a million or more pounds of fish, more than half of which has been whitefish and most of the remainder trout.

Probably the most pleasant of all the major Precambrian lakes is Cree. Its 446 square miles of water area are dotted with eight or nine hundred islands, some quite large (a couple even containing small lakes of their own) and others merely rock-strewn sand-bluffs a hundred feet or more in diameter, each with its growth of spruce and jack pine. Cree is almost unique among major Saskatchewan lakes in that its shores consist of mile upon mile of superb, curving, white sand beaches, each with its shallow-

water area extending perhaps 100 yards from the shore, and beyond that a drop-off into deep, cold water. Inshore from the beaches are pine and spruce-grown sand dunes and bluffs, or possibly muskeg areas. The fish are similar in species, size and quality to those of the other big lakes, although there are perhaps fewer Arctic grayling in the rivers adjacent to the Cree than in those of the other lakes. Commercial fishing in recent years has run between 100,000 pounds and 150,000 pounds, lake trout being the major species caught.

Lac la Ronge is unique among the five major lakes in that it has a well-developed tourist industry. Situated mainly inside the boundaries of the Precambrian Shield but with its southern portion extending a few miles into the glacial till plain, Lac la Ronge has most of the best features of the Precambrian lakes combined with accessibility via a good highway.

Since the completion of the highway between Lac la Ronge and Waskesiu in 1948, a minor angling boom has occurred. About 4,500 sport fishermen catch around 150,000 pounds of trout, pickerel and pike each summer and spend over one-half million dollars for guides, boats, food, cabins and other essentials. Lac la Ronge has an area of 450 square miles, and more than a thousand islands. The shoreline of the lake and its islands consists mainly of grey Precambrian granite, dropping off into water up to 140 feet in depth. The water is cold enough to produce big, vigorous fish of the highest quality and is more fertile than the lakes farther north. Whereas the total allowable catch on Wollaston is considered to be less than a pound per acre, Lac la Ronge is considered able to produce about a pound per acre of commercial fish (almost exclusively whitefish), and a pound per acre of trout, pickerel and pike for anglers. No Arctic grayling occur naturally in Lac la Ronge or the adjoining rivers, which form this part of the Churchill River system. For several years, however, grayling fry have been released in and around Lac la Ronge, and there is a possibility that grayling may become established in this area.

In addition to the five major lakes and their host of tributary rivers, the Shield country contains at least a hundred lakes varying between 20 and 200 square miles in area. Of these, Black Lake, off the eastern tip of Lake Athabaska; Careen, south-west of Cree; and Amisk, south-west of Flin Flon, are the best-known angling lakes, the main reason being that they have accommodation for anglers. Amisk, being accessible by road from Manitoba, has developed a fair-sized tourist trade. Other large lakes, such as Riou, Moose (Pasfield) and Birch

(Waterbury) are practically in a virgin state, since they are too isolated for profitable commercial fishing and have been visited by only one or two parties of airborne anglers each summer.

On the edge of the Shield northwest of Lac la Ronge are Snake (Pinehouse), Ile a la Crosse and Churchill Lakes, all of which extend into the Precambrian country. These lakes are commercially fished at present, and since a development highway has been constructed to Buffalo Narrows at the south end of Churchill Lake there will probably be a gradual build-up of sport fishing in these lakes and in Frobisher Lake to the north.

In addition to these larger lakes, there are literally thousands of lakes varying from one or two to 20 square miles, most of which contain fish. Few of these lakes have been fished commercially, and even fewer have been fished for sport. In fact, there are many hundreds of these little lakes that have not even been named. All told, they comprise a vast resource, and one which will probably not become fully developed until the population of the continent doubles or trebles and improved transportation facilities combine with a greatly increased demand for food and sport. To date only about 125 of the Precambrian lakes are commercially fished, and not more than 30 have any facilities for sport fishing. However, this situation will probably change drastically during the next decade or so as Saskatchewan anglers become more interested in the north, and as more and more outfitters become aware of the increasing demand for medium-priced angling facilities on the smaller lakes where guides are not essential.

LAKES OF THE FOREST



LAKES OF THE FOREST

The commercial forest zone of Saskatchewan extends diagonally across Saskatchewan in the form of a belt averaging about 150 miles wide between the Precambrian and the agricultural area. The soil of this area is glacial soil, similar in origin to that of the parklands and prairies farther south, but generally not as fertile. The lakes are all classed as "sedimentary," having shores of sand, gravel, silt or clay rather than the granite so common on the Shield.

Most of the sedimentary lakes are shallower, warmer and more fertile than the lakes of the Precambrian Shield region. They produce greater quantities of fish per acre, but one species, Arctic grayling, is absent from these lakes, and except in the deepest and coldest sedimentary lakes the lake trout does not occur. Although fish are more plentiful in the sedimentary lakes, sometimes totalling ten times the poundage of the Precambrian lakes, the game species seldom reach the great size of those caught farther north.

Many of the lakes of this forest area are close enough to market to permit cisco, certain suckers and pike to be profitably netted, either for human consumption or for use on mink ranches. However, pickerel and whitefish are the major source of income for commercial fishermen.

There are a number of good angling lakes in the forest area. Some of these lakes are close to settled areas and have been accessible to anglers for years, while others have been opened to anglers more recently by construction of forest access roads. Among these are Meeting, Witchehan, Loon, Birch, Midnight, Chitek, Turtle, Brightsand, Waterhen, Greig, Lac des

Iles, Cowan, Delaronde and many smaller lakes. These are good pike and pickerel lakes and the majority have some boat rental service and tourist accommodation but are so lightly angled at present that commercial fishing for pickerel is still permitted. More heavily fished are two lakes in provincial parks within the forest area—Greenwater Lake in Greenwater Lake Provincial Park and Madge Lake in Duck Mountain Provincial Park.

The forest also contains a number of lakes more distant from settlement, only a few of which have been developed to provide accommodation for anglers. The best-known of these are in the Prince Albert National Park—Waskesiu, Crean and Kingsmere. The development of Waskesiu has been an excellent example of planned, sound development of the tourist potential of the north. More than 100,000 people visit this area each year for holiday recreation.

Among the lakes of the forest accessible by road are Cold, Keeley, Primrose, Pierce, Flotten, Lac Ile a la Crosse, Lac la Plonge, Dore, Canoe, Smoothstone, Clarke, Montreal, Candle, White Gull and others. La Plonge, with clear, deep water and sand beaches, is a fine fishing resort lake, partly because it is one of the few forest lakes that contain lake trout, and development of the lake is beginning. Dore is a fine pickerel lake, with the one disadvantage of being somewhat large and open for small boats.

Lac Ile a la Crosse, Churchill and Peter Pond, while accessible by road are somewhat distant for early tourist development, but besides commercial fishing, support a considerable num-



Three happy anglers display their morning catch at Waterhen Lake. Left to right: novelist W. O. Mitchell, journalist Gregory Clark, and Maclean's editor, Ralph Allen.

Madge Lake in Duck Mountain Park is a popular centre for angling and other forms of outdoor recreation.





Forest access roads such as the Whiteswan Road north of Candle Lake are opening new areas to sport fishing.

ber of mink ranchers. Montreal Lake, in spite of its lack of shelter, is a fine pickerel lake and could become a popular fishing lake, but is rivalled on the one hand by the great development of Waskesiu and on the other by the fabulous fishing of Lac la Ronge, only 100 miles farther north. Candle, White Gull and the small lakes of Nipawin Provincial Park have a good potential as tourist lakes, having good beaches and good fishing. Pierce and Lac des Iles are also very pleasant lakes, although somewhat distant from the population centres, and Flotten is also drawing some anglers. Cold Lake is somewhat lacking in sheltered areas, and Primrose is in the centre of the new aerial target range. Over to the northeast, inaccessible by road, are Big Sandy, Ballantyne Bay, Wapawekka, East Trout, Suggi, Windy and

Cumberland. Development of these lakes will depend to a great extent on major access roads being built into the area. Partial exceptions to this may be East Trout Lake where a "fly-in" fishing resort has already been established and Wapawekka Lake which is separated from Lac la Ronge by a short portage. In addition to these major lakes of the forest area, there are some dozens of smaller lakes which none the less provide good angling, and some of which are already developed to some extent. About 70 forest area lakes are commercially fished at present. As angling pressure increases on these lakes, commercial fishing limits for game species will be reviewed and adjusted in the interest of the best productive management of the resource.

LAKEs OF THE SOUTH



LAKES OF THE SOUTH

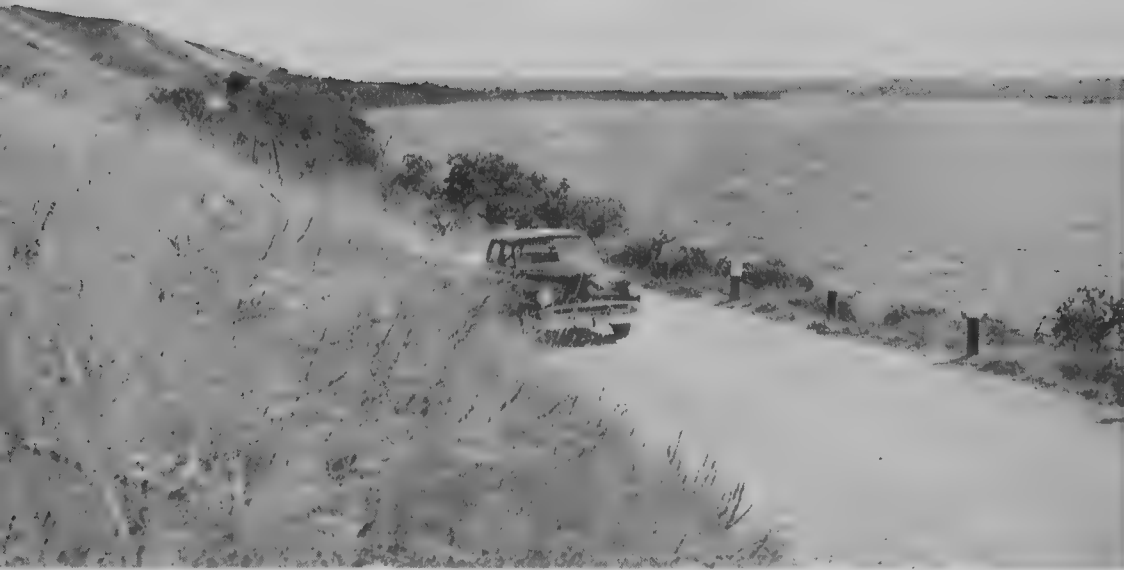
The lakes of the parklands and prairie area are comparatively few in number, and for the most part suffer from lack of drainage, since they are located on a great level plain with shallow and poorly defined water-courses. Almost the sole exceptions are the lakes of the Qu'Appelle Valley. This series of eight lakes—Eyebrow, Buffalo Pound, Qu'Appelle, Echo, Lebret, Katepwa, Crooked and Round—are located in a valley varying from 150 feet deep at its headwaters to 400 feet at the Manitoba boundary. This great and very lovely valley served as the main drainage for the southern part of the prairie provinces during the time when the great glaciers were receding from the Central Plain. As the ice receded northward, and the amount of glacial meltwater diminished, the mighty Qu'Appelle River of that period was reduced to a river only a couple of rods wide meandering along the floor of the valley. Small as it is, however, the Qu'Appelle River provides adequate drainage for its chain of lakes and for the 60-mile long finger of water, Last Mountain Lake, which extends north from the valley at Craven.

Almost all the other major lakes south of the North Saskatchewan River are poorly drained and highly mineralized. Big and Little Quill Lakes provide an example of such lakes. They are quite large, covering about 200 square miles, are shallow, and are fed by streams draining a considerable area of land, much of which is saline. Consequently, in dry periods most of the water that runs into the Quill Lakes evaporates, causing the water of the lakes to become highly saline. Only after many years of high rainfall is there much drainage

from these lakes. Before 1920, the Quill Lakes produced fish, but in the 1920's and 1930's the water became too highly mineralized for successful spawning, and fishing dropped off completely. The mineral content of the lakes rose to about 30,000 parts of minerals per million parts of water, as compared to about 2,500 parts per million in the better drained Last Mountain Lake. Similarly, Redberry, Basin, Lenore and a host of smaller lakes are intermittent producers due to high mineral content. Others, such as Manito, Manitou, Chaplin and Old Wives have such a concentration of minerals that no fish live in them. Still others, most of them in the category of potholes and ponds, exist because the water table is high enough to fill the low lying areas in precisely the way that a well or level land dugout fills up. Such lakes, with a small surface area and a small watershed, may be suitable for fish production if they are deep enough to prevent winter kill. However, most small lakes and sloughs in the agricultural area are too shallow and contain too much vegetation to permit fish to winter, since a heavy crop of aquatic plants uses up the oxygen in the water at a high rate as soon as the sunlight is blocked off by snow.

Thus in the whole settled area of Saskatchewan, there are only about 40 lakes which, by any stretch of imagination, qualify as major angling lakes. In addition, there are perhaps 25 minor lakes which contain a limited amount of fish and attract a few anglers and support small catering establishments and boat rental services; and a number of ponds, which attract strictly local anglers.

Of all the lakes in Saskatchewan's



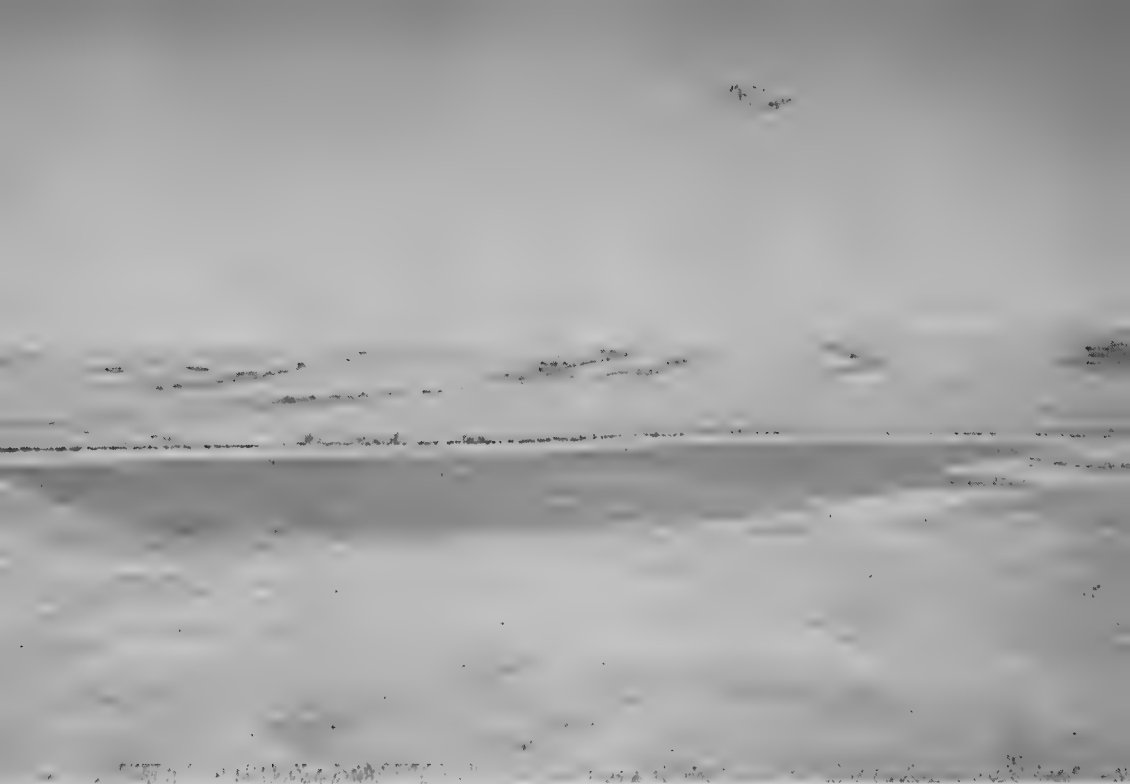
Lake Katepwa is typical of the string of lakes in the Qu'Appelle Valley.

settled area, the Qu'Appelle chain and Last Mountain Lake are by far the most heavily fished. Fortunately, these are among the most productive of all lakes in the province—Last Mountain Lake being especially productive—and are able to provide angling year after year. The main sporting species in these lakes are northern pike, pickerel and perch. As in all heavily angled lakes, there are few outsize fish in these lakes, although four or five-pound pickerel and 20-pound jacks are occasionally caught. Perch—an ideal eating fish—weigh up to two pounds and are a favorite summer angling fish for the less active angler, since they are caught on an ordinary hook and line in the shallow water areas. Winter angling is carried on to some extent on these lakes, perch

being the main species caught.

Other good fishing lakes in the south include Arcola (Kenosee) Lake in Moose Mountain Provincial Park, which is provided with excellent resort facilities, and White Bear (Carlyle), lying just east of the park and also with good resort facilities. Also adjacent to a provincial park is Good Spirit Lake, bordered by Good Spirit Park 30 miles or so northwest of Yorkton. In the general Wadena-Rose Valley-Archerwill area are a number of small lakes and ponds, many of which have boat rental services and provide fairly good fishing.

Lake Lenore, Basin Lake and Red-berry Lake are fairly large but are not exceptional fishing lakes, and in these lakes stocking with fry has been necessary, since they are not suited to suc-



New water impoundments such as the Kelfield Reservoir are providing additional sport fishing waters.

cessful spawning. Wakaw Lake, 40 miles south of Prince Albert, is a fairly good pike lake. North of the Battlefords are found a considerable number of good angling lakes, including Jackfish and Murray, where many North Battleford citizens have summer cottages.

The settled areas also contain a

number of streams where introduced trout species are found. In the Cypress Hills area, including Frenchman River and its many tributaries, are found rainbow (Kamloops) trout, brown (Loch Leven) trout and speckled (eastern brook) trout—all excellent sport fish, lending themselves to fly-fishing techniques.



High quality standards in new fish processing plants in the north ensure a market for Saskatchewan's commercial fish harvest.

Fly fishing for grayling in the Black Birch River near Carcen Lake.



TRENDS IN UTILIZATION

In the early days, when the fur traders were just beginning to probe the fringes of the prairies, the hardships involved in trade and travel were almost insurmountable. Wild game, depending on the season or region, was often scarce. Thus, during the whole adventurous century beginning with the establishment of the Frobisher brothers' first trading post on the Saskatchewan in 1773, the great fur trade often depended solely on fish. Except in the buffalo country, all trading posts and forts were established on good fishing waters. The great fur brigades, travelling by canoe from Montreal to the Athabaska country via the Great Lakes, Lake Winnipeg and the Churchill River system, were provisioned mainly by fish, although dried corn, moose, caribou and pemmican made from buffalo meat were used for variety when available.

To some degree the presence of fish may have influenced Canadian and British people to believe that the prairies would be suitable for agricultural settlement. Captain John Palliser, in his famous survey of the agricultural potential of the west in 1860, said that among the natural facilities offered to agricultural settlement "is the facility for obtaining good fish for food during the transition state that a country must endure between the period when its inhabitants live on wild animals alone, and that period when bread becomes the staff of life and animal food is produced by the care and forethought of civilized men. None can so readily appreciate the advantage that a farmer would derive from a certainty of obtaining plenty of fish in the neighborhood of his farm as those who know the difficulties

attending the hunting of animal food." The settlers of the early days did use a fair amount of fish for food, often trapping suckers in the spring runs, sometimes using woven willow basket traps, and salting the fish down for summer use.

Pike, pickerel, goldeye and cisco were also taken in quantity, salted, often smoked and dried, as were whitefish and trout in areas where they were available. In the days before the railway network was established, there is little doubt that the supply of food fish did much to make the lot of the settler a little less insecure.

Saskatchewan fish have also contributed to a development of some historic magnitude within recent times. During the first tentative developments of the "bush flying," which eventually opened up a million or more square miles of Canadian territory for development, fish was a major cargo. It is said that the present head of one of Canada's major airlines, while freighting fish by plane from Churchill Lake, carried more poundage per annum during the late 1920's and early 1930's than the total of all other commercial airlines on the continent.

During the first decades after the general settlement of the province, fish occupied a smaller niche in the economy of the province and in the interests of Saskatchewan people. However, recent trends have brought the fisheries of the province back into focus as an important resource. With approximately one out of nine people in Saskatchewan angling, with a heavy demand for food fish on the American market, with more than two and a half million pounds being utilized under domestic licence and Free Indian

Permits, and with fur farm fishing rising beyond the six and a half million pound mark, the province's fisheries are filling a larger and larger place in the affairs of Saskatchewan people.

Winter fishing is currently carried on in approximately 75 lakes, of which about 65 are on the Precambrian Shield. In the past, winter fishing accounted for the largest portion of the commercial catch, due mainly to the freezing facilities provided by nature and the relatively low cost of transport by truck and cat-train over frozen winter roads. However, construction of roads and processing plants is swinging the emphasis towards summer fishing.

Winter fishing requires the use of an ingenious device known as a "jigger" which is lowered into the water through a hole chiselled in the ice. The "jigger" propels itself along the underside of the ice by movement of an attached line. Another hole is then chiselled in the ice to remove the "jigger" and the line is used to haul a length of net between the holes. The net is suitably weighted to sink to the depth required to catch fish which are usually in the deeper, warmer water during winter. One team of commercial fishermen may string eight or ten hundred-foot lengths of net, leave them overnight or longer, then chisel open the holes and haul out the nets with their burden of fish. The fish are "chucked" out of the net immediately and cleaned on the spot.

Care in cleaning and handling and quick shipment to market are essential in winter or summer to obtain a high quality product. In certain areas fish are filleted, packaged and quick-frozen in large privately run or co-operative packing plants. There are

large plants at Buffalo Narrows, Lac la Ronge, Kinoosao on Reindeer Lake, Wollaston Lake, Amisk Lake and Lake Athabaska. The major portion of Saskatchewan fish is sold in the United States, but as the quality of local fish on the market rises and handling facilities are expanded, the provincial market is absorbing an increasing amount.

The main mink ranching lakes of the province are those of the Buffalo Region: Churchill, Little Peter Pond and Big Peter Pond. In a given year the more than 100 operators of mink ranches may utilize six and a half million pounds or more of fish to feed approximately 50,000 mink. The main species used for mink feed are white-fish, cisco and pike, with a small proportion of burbot and pickerel. Fewer suckers are fed to mink because they may have harmful effects. The value of the fish used by fur farmers depends, of course, on the price of pelts, which may fluctuate drastically. During recent years, the value of fish converted into mink pelts has been considerably higher than the value per pound of fish sold by the commercial fishermen on the lake. Due to the high cost of handling and shipping to a distant market, the commercial fishermen on the northern lakes may realize only five to ten cents per pound for the food fish he catches. When fur prices are favorable, the fur farm fisherman may make twice as much per pound from the same species by converting them into pelts.

Fishing for sport has developed as a major form of recreation in Saskatchewan only since World War II. In 1947-48 for instance, fewer than 17,000 licences were sold. By 1956-57 angling licence sales had climbed past the 90,000 mark, and because youngsters under 16 do not require a licence,



Anglers anxiously await the results of a fish derby—an indication of the tremendous growth of interest in sport fishing.

the total number of anglers in the province is estimated at around the 100,000 mark.

Angling is probably the highest and most desirable use for fish other than coarse or non-game species. The value of angling in terms of recreation cannot be measured in dollars and cents, but outdoor recreation plays a vital part in the social and cultural development of a people. From a strictly economic standpoint, the value of fish harvested by anglers and added to the family food larder is considerable although no estimates have as yet been made on a provincial basis. But of even greater economic value is the tourist and outfitting industry that angling helps support.

An angler may gladly pay \$50 to \$350 or more for accommodation for a week of fishing, and catch only 50 or 100 pounds of fish. While a considerable proportion of this cost is for services such as cabins, boats and

guides, the profit, or net value of the fish to the tourist operator may vary from 25 cents to more than a dollar per pound—five or ten times the net value per pound to the commercial fisherman. The actual outlay for angling may be considerably less in the southern part of the province, and particularly for resident anglers, but even in this area a considerable sum of money is expended on equipment and travel expenses even by the fisherman who makes an occasional trip to the nearest lake for a day's fishing.

One of the unusual features of current angling habits in the province, is the comparative lack of interest shown by resident anglers in the northern lakes, particularly those of the Precambrian Shield. However, this is probably due to several factors including the high cost of travel to the more remote lakes, the relatively high cost of accommodation in the north and the established pattern of weekend visits by an entire family

to a nearby lake where swimming, boating and fishing can be combined. Holidays are usually spent in some other province or in the United States

because people are not generally aware of the holiday potential in the provincial parks and forest area of their own province.

CONCLUSION

One interesting observation may be made on the present state of our fisheries resources: only in a few instances have they suffered because of utilization or as a result of the industrial, commercial and agricultural development of the province. The resources are in at least some respects in better condition today than before the coming of the white man. This improvement has been achieved through the introduction of species such as brook, brown and rainbow trout which have added variety to the species available for angling, and through the introduction of exotic and native species to new water impoundments.

Further improvement, or at least maintenance of the resources in their present condition, will be possible through proper management programs and through control of pollution and siltation which may adversely affect fishing waters.

The trends which have been noted in the preceding chapter can be expected to result in some further changes in the patterns of use. More intensive angling pressure may be expected in the southern part of the province, particularly in those lakes adjacent to large urban centres such as Saskatoon, Regina and Moose Jaw. To some extent this increased pressure may be alleviated by stocking of further water impoundments, notably the lake which would be formed by construction of the proposed South Saskatchewan Dam. However, further

pressure on southern lakes will tend to force more and more anglers northward to the lakes of the forest and Precambrian areas.

Road construction will be the key to changing patterns of use in the north. There is room for further development of the mink ranching industry, which utilizes fish not suited for sport or commercial fishing, particularly on lakes which are presently inaccessible. Roads and construction of additional fish processing plants will place the commercial fishing industry on a firmer and more profitable basis. Additional lakes will undoubtedly have to be closed to commercial fishing of species such as lake trout, pike and pickerel, but roads and processing plants will make commercial fishing operations possible on lakes which are currently not in production or are under-harvested.

However, the main change in the north will be the further development of sport fishing. Well-to-do sportsmen from all parts of the continent will continue to fly in to relatively high-priced fishing lodges on the remote lakes. But the advent of roads will be followed by provision, on accessible lakes, of lower-cost accommodation for the average Saskatchewan angler and for family vacationers from other provinces and the United States. Thus our fisheries resources will play an even greater role than they have in the past as a cornerstone of the province's growing "outdoor recreation" industry.

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Prepared by D. F. Symington in co-operation with staff of the Fisheries
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Commercial fishermen, pulling their net from under the ice, share in the harvest of fish from a northern lake.

Winter is also a time for angling as these two sport fishermen have found.

